

Claims 5-8 are pending.

Claims 5-8 stand rejected under 35 U.S.C. § 103(a).

Claim 5 has been amended to overcome the rejection.

None of the amendments to the claims introduces new matter.

Attached hereto as **APPENDIX A** is a marked-up version of the changes made to the claims by the current amendment. The attached pages are captioned “**VERSION WITH MARKINGS TO SHOW CHANGES MADE.**”

Objection to the Specification

The Abstract of Disclosure has been objected to under MPEP § 608.01(b) because it is not directed to the claimed invention. The original Abstract of the Disclosure has been canceled, and a new Abstract of the Disclosure in compliance with MPEP 608.01(b) has been submitted herewith on a separate page. Withdrawal of the objection to the Abstract is respectfully requested.

Claim Rejection – 35 U.S.C. § 103(a)

The Examiner has rejected claims 5-8 under 35 U.S.C. § 103 as being unpatentable over Aoki (JP406051679) (“the Aoki reference”) in view of Valyi (US5,082,604) (“the Valyi reference”). Reconsideration and withdrawal of this rejection are respectfully requested based on the following remarks.

As defined in amended claim 5, the claimed invention relates to a method for producing a magnet roller. A resin-bonded magnet material is injected into a cavity of a metal mold while a magnetic field is applied to the metal mold. The metal mold includes a fixed mold with a cavity for forming a solid magnet body as well as a movable mold disposed in the cavity which is capable of changing the volume of the cavity. The method includes the following two

steps: (1) moving the movable mold during the injection process such that the volume of the cavity increases in accordance with the amount of resin-bonded magnet material simultaneously injected into the cavity in a molten state, and (2) magnetizing the magnet body molded in the cavity by the magnet field generator disposed around the mold. Further, claim 5 requires “the two steps being performed in parallel.” Thus, among other things, the instant claimed invention requires that the steps of moving the movable mold during the injection process and magnetizing the magnet body molded in the cavity by the magnet field generator disposed around the mold be performed in parallel.

The Aoki reference is directed to a process for manufacturing a magnet roller. The Aoki reference discloses injection molding a magnetic powder/binder mixture into the cavity of a mold while applying a magnetic field thereto, but does not disclose the specific configuration of the injection mold. Thus, there is no mention in the Aoki reference of a movable mold to change the cavity volume in accordance with the amount of resin-bonded material that is simultaneously injected into the cavity in a molten state, as is required by the instant claimed invention.

The Valyi reference discloses, as a means to overcome shrinkage, a mold cavity capable of changing its volume as the molten plastic is forced into it via a movable piston at one end. (The Valyi reference, col. 1, lines 48-64) The Valyi reference, however, only concerns the injection molding of a “common thermoplastic.” (The Valyi reference, col. 2, lines 15-19) (emphasis added) The instant claimed invention, by contrast, requires the molding of “a resin-bonded magnet material,” which is clearly not a common thermoplastic.

There is no suggestion in either reference to combine their teachings together. The Aoki reference discloses a mold for manufacturing a magnet roller, but provides no

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suggestion to change the cavity volume, as is required by the instant claimed invention.

Although the Valyi reference teaches changing the cavity volume during the molding process of a thermoplastic to reduce shrinkage, it provides no suggestion of molding a resin-bonded magnet material using this mold configuration, as is required by the instant claimed invention. Absent a suggestion to combine the two references, an obviousness rejection is improper. *C.R. Bard, Inc. v. M3 Sys. Inc.*, 157 F.3d 1340, 1352, 48 U.S.P.Q.2D 1225, 1232 (Fed. Cir. 1998).

The present invention, furthermore, is more than just a combination of two conventional molding approaches. It is a specific and detailed injection molding approach wherein the volume of the cavity is changed in parallel with a magnetic field being generated. No such method is envisaged by the Aoki reference or the Valyi reference alone or in combination. The cited references thus, do not teach, disclose, or suggest the claimed invention to a person of ordinary skill in the art or motivate such a person to make such an invention. Accordingly, the rejection under 35 U.S.C. § 103(a) should be withdrawn and claim 5 should be allowed. Any reliance on the hindsight afforded by the present specification is improper. *In re Paulsen*, 30 F.3d 1475, 1482 (Fed. Cir. 1994).

Claims 6-8 depend from claim 5, and therefore are patentable over the Aoki reference in view of the Valyi reference.

Change of Title

The title of the invention has been changed to relate to the method claims of the instant application.

Conclusion

In view of the foregoing, the application is now believed to be in condition for formal allowance. Prompt and favorable action is respectfully requested. A check in payment of

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the requisite extension of time fee is enclosed. Applicants do not believe that any additional fee is required in connection with the submission of this document. However, should any additional fee be required, or if any overpayment has been made, the Commissioner is hereby authorized to charge any fees, or credit or any overpayments made, to Deposit Account 02-4377.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Richard G. Berkley", is written over a horizontal line.

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APPENDIX A

VERSION WITH MARKINGS TO SHOW CHANGES MADEIn the Specification:

The title of the invention has been amended as follows:

[APPARATUS AND] METHOD FOR PRODUCING A SOLID MAGNET ROLLER USING A
MOVABLE MOLD

In the Claims:

Claim 5 has been amended as follows:

5. (Amended) A method for producing a magnet roller in which a resin-bonded magnet material, which is composed primarily of magnetic powder and a binder, is injected into a cavity of a metal mold while applying a magnetic field thereto, wherein the metal mold comprises a fixed mold having a cavity for forming a solid magnet body and a movable mold disposed in the cavity and capable of increasing or decreasing a volume of the cavity [are used as the metal mold;], and wherein a magnetic field generator is disposed around the metal mold, the method comprising the steps of:

[while injecting a melted resin-bonded magnet material into the cavity, the movable mold is moved such that the volume of the cavity is increased in accordance with the injected amount of the melted resin-bonded magnet material, and a magnet body molded within the cavity is magnetized by a magnetic field generator disposed around the fixed mold.]

moving the movable mold such that the cavity volume is increased in accordance with the amount of the resin-bonded magnet material that is simultaneously injected into the cavity in a molten state; and

magnetizing the magnet body molded in the cavity by the magnet field generator
disposed around the metal mold, the two steps being performed in parallel.